

REMARKS

In the Office Action the Examiner noted that claims 1-29 are pending in the application. The Examiner allowed claims 1-6, rejected claims 1, 8, and 19, and objected to claims 9-18 and 20-29. The Examiner's rejections are traversed below, and reconsideration of all rejected claims is respectfully requested.

Claim Rejections Under 35 USC §102

On pages 2-3 of the Office Action the Examiner rejected claims 7, 8, and 19 under 35 U.S.C. §102(b) as being anticipated by Han, G. M. (KR 2001011309A) (hereinafter referred to as "Han").

Claim 7 of the present application recites:

An image encoding system, comprising:
a discrete cosine transform (DCT) unit performing a DCT on incoming image data;
a quantization unit quantizing the DCT image data;
a dequantization unit dequantizing the quantized image data;
an inverse DCT (IDCT) unit performing IDCT on the dequantized image data;
frame memory storing the IDCT image data on a frame-by-frame basis;
a motion estimation unit sampling the image data of a current frame and the image data of a previous frame stored in the frame memory resulting in a hierarchical structure for each frame, and estimating frame and field motion vectors at a high resolution level based on motion vectors obtained from frame data at a low resolution level; and
a variable length coding unit removing statistical redundancy from the quantized image data using the motion vectors estimated by the motion estimation unit.

Therefore, the frame memory stores "the IDCT image data on a frame-by-frame basis, and the motion estimation unit samples "the image data of a current frame and the image data of a previous frame stored in the frame memory resulting in a hierarchical structure for each frame," and estimates "frame and field motion vectors at a high resolution level based on motion vectors obtained from frame data at a low resolution level."

The Examiner, in rejecting claims 7, 8, and 19, has simply recited verbatim the language of claim 7, and referred to allegedly similar structures in Figure 1 of Han that presumably provide similar functions. Regarding the "frame memory storing the IDCT image data on a frame-by-frame basis" of claim 7, the Examiner has simply stated "See detailed description." However, the "detailed description" of Han provided and cited by the Examiner, referring to a frame memory, only states a "motion estimation and compensation unit (12) estimate (sic) motion vector (sic) while storing the video signal in a frame memory by the one frame, and compensates

the estimated motion vector." Further, this is the only detail provided by this "detailed description" that explains the function of the "motion estimation and compensation unit" of Han. There is no disclosure of how this process takes place, or what is involved in the motion vector estimation of Han. Particularly, there is no disclosure of "sampling image data of a current.... and previous frame stored in the frame memory resulting in a hierarchical structure for each frame, nor "estimating frame and field motion vectors at a high resolution level based on motion vectors obtained from frame data at a low resolution level." There is nothing disclosed in Han at all regarding different levels of resolution being taken utilized in the motion estimation unit.

Therefore, Han merely discloses a motion estimation and compensation unit which estimates motion vectors while storing the video signal in a frame memory, and compensating the estimated motion vector. This is in direct contrast to the claim 7 of the present application, which recites "a motion estimation unit sampling the image data of a current frame and the image data of a previous frame stored in the frame memory resulting in a hierarchical structure for each frame, and estimating frame and field motion vectors at a high resolution level based on motion vectors obtained from frame data at a low resolution level." There is no disclosure whatsoever in Han which describes the estimation of frame and field motion vectors "at a high resolution level based on motion vectors obtained from frame data at a low resolution level."

Therefore, Han does not disclose, at the very least, the feature of an "a motion estimation unit sampling the image data of a current frame and the image data of a previous frame stored in the frame memory resulting in a hierarchical structure for each frame, and estimating frame and field motion vectors at a high resolution level based on motion vectors obtained from frame data at a low resolution level." Accordingly, Han does not disclose every element of the Applicant's claim 7. In order for a reference to anticipate a claim, the reference must teach each and every element of the claim (MPEP §2131). Therefore, since Han does not teach the features recited in independent claim 7, as stated above, it is respectfully submitted that claim 7 patentably distinguishes over Han, and withdrawal of the §102(b) rejection is earnestly and respectfully solicited.

Claim 8 recites "a motion estimation (ME) unit forming a hierarchical frame structure by sampling image data of a current frame and the image data of a previous frame stored in the FM, and performing a frame motion estimation by applying based motion vectors (MVs)." As stated above, Han does not disclose forming a hierarchical frame structure using image data of a current and previous frame stored in a frame memory. Therefore, it is respectfully submitted that claim 8 also patentably distinguishes over Han.

Claim 19 recites "forming a hierarchical frame structure by sampling image data of a current frame and the image data of a previous frame stored, and performing a frame motion estimation by applying based motion vectors." Therefore, it is respectfully submitted that claim 19 also patentably distinguishes over Han.

Objected To Claims

On page 4 of the Office Action the Examiner objected to claims 9-18 and 20-29 as being dependent upon a rejected base claim, but indicated that the claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As stated in the previous section of this response, claims 8 and 19 patentably distinguish over Han. Claims 9-18 and 20-29 depend from claims 8 and 19, respectively, and include all of the features of those claims plus additional features which are not taught or suggested by Han. Therefore, it is respectfully submitted that claims 9-18 and 20-29 also patentably distinguish over Han.

Summary

There being no further outstanding objections or rejections, it is respectfully submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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